Tuberculous Enteritis

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Tuberculous enteritis occurs in about 2 percent of patients with pulmonary tuberculosis. Although it is uncommon in the United States, tuberculous enteritis should be considered in any patient with active pulmonary tuberculosis and abdominal complaints.

Eight cases of T. enteritis have been treated at Harbor General Hospital in the last 25 years. Associated pulmonary disease was shown radiologically to be present in seven of eight patients. Findings on contrast studies of the gastrointestinal tract showed disease in six of six patients examined.

In five patients, surgical operation was required for diagnosis or complications. Resection of diseased bowel with primary anastomosis was done in five patients. Although medical therapy is the mainstay in the treatment of both pulmonary and intestinal tuberculosis, one staged resection of diseased bowel with primary anastomosis is the procedure of choice for complications such as obstruction, hemorrhage or perforation.

TUBERCULOSIS OF THE intestinal tract is uncommon in the United States. The fact that the disease occurs infrequently results in diagnostic oversight. We report eight cases of tuberculous enteritis treated at Harbor General Hospital in the last 25 years, five since 1964. Emphasis is placed on early diagnosis and surgical management of complications. Current concepts in the clinical management of gastrointestinal tuberculosis are reviewed.

Materials and Methods

All cases in which there was histopathologic or radiographic evidence of tuberculous gastrointestinal disease in combination with positive acid-fast bacillus smears of cultures are included in the study.

Table 1 lists the patients' chief complaints, as well as initial hemogram and radiographic findings in these cases. No patient gave a history of contact with tuberculosis. On physical examination, a tender right lower quadrant mass and fever were noted in half of the patients. Rales were reported on examination of the chest in only one patient.

Results

One patient died before effective therapy was initiated. Another patient was treated successfully with isonicotinic acid hydriazide (Isoniazid®) and ethambutal hydrochloride (Myambutal®) alone.

In five patients, surgical operation was carried out for diagnosis or treatment of a complication. The correct preoperative diagnosis was made in only one patient (see report of case). Resection of the diseased bowel was done in four of the five cases in which operations were carried out; extensive disease in the fifth precluded resection.

Two of the five patients died of the disease shortly after operation while the remaining three were well at last follow-up.

Pathologic findings are shown in Table 2. Three of the eight patients died from overwhelming tuberculosis. The five survivors were all well and asymptomatic at the time of their last clinic visit. Morbidity in the survivors was limited to confinement for adequate treatment of pulmonary disease.

In all, there was microbiologic evidence of infection with mycobacterium tuberculosis in seven of the eight patients (Table 3).

TABLE 1.—*Chief Complaint and Initial Diagnostic Studies*

Pa-tient	Age, Sex	Race	Symptoms	X-ray Findings	Hemogram
1 ..	76 ♀	B	Abdominal pain, rectal bleeding	CXR—No active pulmonary disease BE—Irritable colon and cecal volvulus	PCV—36% WBC—11,700
2 ..	69 ♂	C	Abdominal pain	CXR—Consistent with pulmonary tuberculosis	PCV—36% WBC—9,000
3 ..	73 ♂	C	Abdominal pain, constipation	CXR—Consistent with pulmonary tuberculosis	PCV—45% WBC—10,800
4 ..	72 ♂	A	Abdominal pain, weight loss	CXR—Consistent with pulmonary tuberculosis BE—Cecal obliteration and narrowing of terminal ileum	PCV—32% WBC—9,900
5 ..	26 ♀	C	Abdominal pain, chronic cough, fever	CXR—Far advanced pulmonary tuberculosis BE—Cecal obliteration UGI's—Stricture of terminal ileum	PCV—43% WBC—6,600
6 ..	45 ♂	C	Fever, cough, weight loss	CXR—Advanced pulmonary tuberculosis with cavitation BE—Cecal mass and multiple strictures of right colon	PCV—38% WBC—7,500
7 ..	12 ♂	C	Abdominal pain, weight loss	CXR—Calcified primary complex BE—Right colonic stricture with dilated proximal colon and terminal ileum	PCV—21% WBC—3,200
8 ..	58 ♂	C	Weakness, weight loss	CXR—Advanced pulmonary tuberculosis with cavitation UGI's—Gastric ulcer, ulcerated terminal ileum, cecal mass and fistula	PCV—34% WBC—4,300

CXR = x-ray film of chest
BE = barium enema
PCV = packed cell volume (hematocrit)

UGI = upper gastrointestinal series
WBC = leukocyte (white blood cell) count

TABLE 2.—*Treatment, Pathology and Results*

Patient	Operation	Pathology	Hospital Stay (days)	Mortality
1 ..	Exploratory laparotomy	Widely disseminated tuberculosis, tuberculous enterocolitis, retroperitoneal abscess, caseation necrosis	16	+
2 ..	None	Pulmonary tuberculosis, tuberculous enteritis with caseation necrosis	6	+
3 ..	Parital distal ileal resection with primary anastomosis	Acute inflammatory infiltrate with necroses and perforation of distal ileum secondary to tuberculous enteritis	1	+
4 ..	None	None	152	—
5 ..	Right hemicolectomy and primary ileo-transverse colostomy	Fibrous adhesions (operation and pathologic findings at another hospital)	121	—
6 ..	Resection of terminal ileum and right hemicolectomy with primary ileo-transverse colostomy	Tuberculous entercolitis, caseation necrosis	104	—
7 ..	Right hemicolectomy and primary ileo-transverse colostomy	Tuberculous enterocolitis with partial cecal obstruction, caseation necrosis	26	—
8 ..	Ileo-right hemicolectomy with primary jejuno-transverse	Tuberculous enterocolitis with three free perforations, caseation necrosis	125	—

TABLE 3.—*Microbiologic Data*

Patient	Smear	Positive Culture	Organism
1	+neck sinus; —peritoneal fluid	Sputum	Mycobacterium tuberculosis
2	....	Sputum	Mycobacterium tuberculosis
3	....	....	....
4	+gastric washing	Sputum	Mycobacterium tuberculosis
5	+sputum	Sputum	Mycobacterium tuberculosis
6	+sputum	Sputum; gastric washing	Mycobacterium tuberculosis
7	....	Resected bowel	Mycobacterium tuberculosis
8	+ gastric washing; + sputum	Sputum; gastric washing	Mycobacterium tuberculosis

Report of a Case

The complication of free perforation has occasionally been noted to occur during treatment with antituberculous drugs.[1] The patient discussed below is an example of such a case.

A 55-year-old white man (listed as patient number 8 in tables) was admitted to Harbor General Hospital in August, 1972 with complaint of weakness, melenotic stools and a 23-pound weight loss over a ten-week period. Medical history included symptoms of peptic ulcer, and a gastric ulcer had been documented on a previous gastrointestinal series. The patient had a 40 pack per year smoking history but had no knowledge of tuberculosis contacts.

Temperature on admission was 38°C (101°F) and other vital signs were normal. On physical examination, atelectatic pulmonary rales and dif-
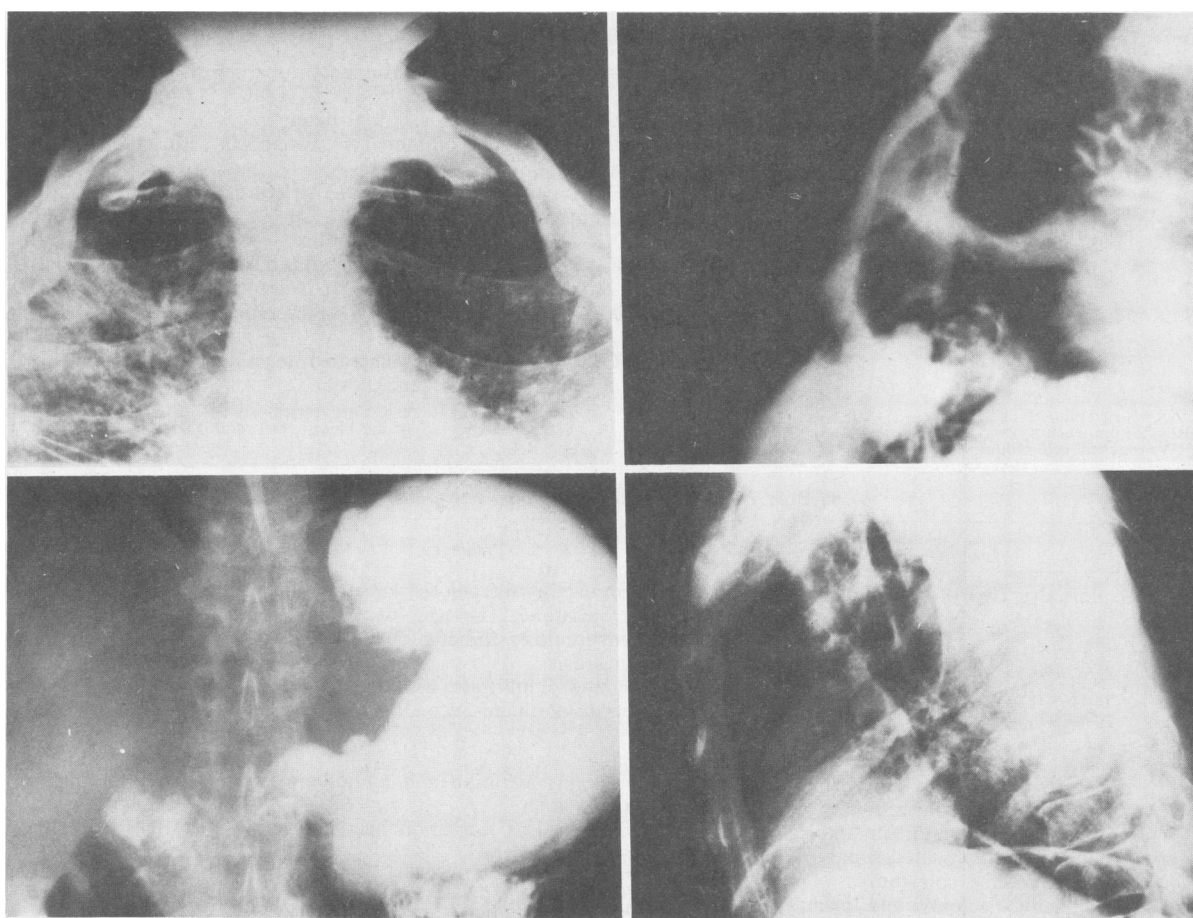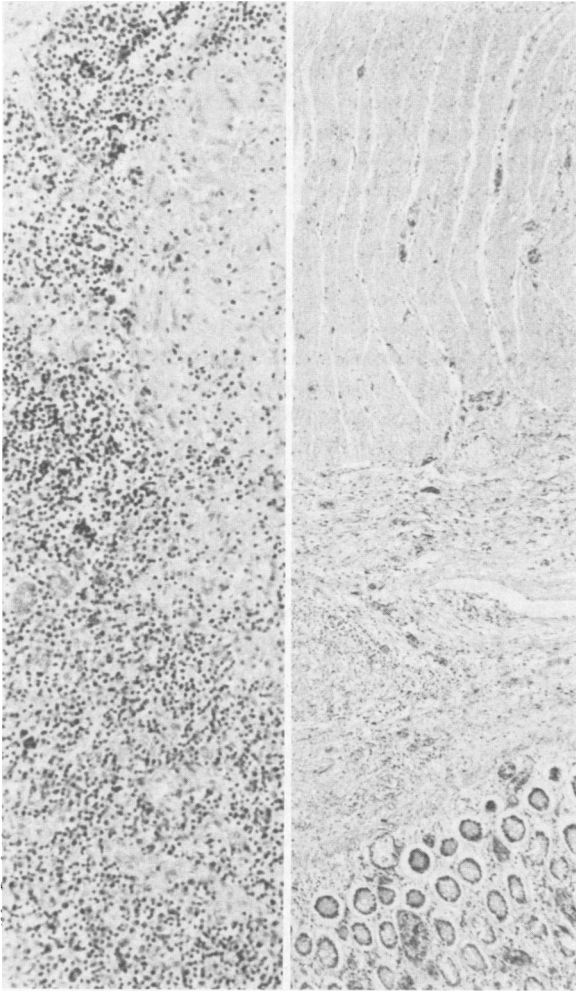

Figure 1.—Upper Left, initial chest film; Lower Left, upper gastrointestinal series; Upper Right, small bowel follow-through; Lower Right, lateral chest film.

Figure 2.—Left, mesenteric lymph node with multinucleated giant cells—reduced from 40×Mag.; **Right,** ileum with caseated submucosal tubercles—reduced from 10×Mag.

fuse abdominal tenderness were noted. Admitting laboratory study findings included an hematocrit of 34 percent, leukocyte count of 4,300 and normal serum electrolytes. Bilateral cavitary upper lobe infiltrates were identified on an x-ray film of the chest (Figure 1). Findings on further diagnostic studies included a positive reaction to intradermal injection of 100 Todd units of purified protein derivative (second-strength PPD), and a positive acid-fast smear of gastric washings. A diagnosis of pulmonary tuberculosis was made and antituberculous therapy begun with isonicotinic acid hydriazide (Isoniazid®) and ethambutol hydrochloride (Myambutol®).

On upper gastrointestinal series a gastric ulcer was noted, and small bowel follow-through showed ileal mucosal ulceration and compres-

sion of the cecum by an extrinsic mass (Figure 1). These findings were felt to be consistent with tuberculous enteritis.

After ten days of treatment, acute abdominal pain developed suddenly. Based on x-ray evidence of free peritoneal air (Figure 1), a perforation of the previously noted gastric ulcer was suspected and the patient was taken to surgery. At the time of operation, three free perforations of the distal ileum were identified in association with severe tuberculous peritonitis. The gastric ulcer had not perforated. The involved ileum and right colon were resected and a jejuno-transverse colostomy carried out. Examination of the gross specimen showed fibrosis and mucosal ulceration typical of tuberculous enteritis, and histopathologic examination showed caseation necrosis although tubercle bacilli were not identified (Figure 2).

Following operation the patient did well but a lengthy hospital stay was required for treatment of pulmonary lesions. Subsequent gastroscopic examination showed there to be complete healing of the gastric ulcer. When last seen, 18 months after discharge, the patient was asymptomatic and working actively as a longshoreman.

Discussion

Tuberculous enteritis is uncommon in the United States. The low incidence of the primary form is undoubtedly due to rigid control of dairy herds and pasteurization of milk. To our knowledge, primary gastrointestinal tuberculosis has not been reported in this country since 1964.

In 1930, Brown and Sampson felt intestinal tuberculosis to be the most common extrapulmonary manifestation of pulmonary tuberculosis.[2] Almost 70 percent of patients dying from pulmonary tuberculosis in that era had tuberculous enteritis.[3-5] More recent studies indicate that in cases of early pulmonary tuberculosis there is a 1 percent incidence of tuberculous enteritis, while in advanced cases the incidence has been reported as high as 70 to 80 percent.[6,7]

It is generally felt that gastrointestinal tuberculosis is caused by the ingestion of tubercle bacilli and consequent invasion of the mucosa by the organism.[8,9] The most common site of intestinal disease is the ileocecal area which is involved in about 90 percent of all cases.[2,10] Localization here is due to stasis of well-digested intestinal contents in an area of active absorption.[11,12] Other sites of intestinal involvement in order of decreasing

frequency are the jejunum, appendix, sigmoid colon, rectum, duodenum, stomach and esophagus.[12] Generally accepted pathologic criteria for making the diagnosis of tuberculous enteritis include the histologic demonstration of tubercle bacilli in the lesion, the histologic evidence of tubercles with caseation necrosis or an accurate gross description of operative findings with biopsies of nodes which show evidence of caseation necrosis.

The rarity, variability and absence of a pathognomonic test frequently obscure the diagnosis of tuberculous enteritis. Age is not a particularly helpful differentiating factor although the average age of our patients, 56 years, would support the reports of others in noting a higher incidence in older patients.

Symptomatology is quite variable. Abdominal pain, as in our series, is the most consistent complaint; followed by fever, weight loss, diarrhea and symptoms of intestinal obstruction. Symptoms in our patients generally followed this pattern, although diarrhea was not reported.

While findings on physical examination may be suggestive, they obviously are not sufficient evidence to confirm the diagnosis of tuberculous enteritis. An abdominal mass is reported in more than 70 percent of cases of tuberculous enteritis and we found a mass in 50 percent of our patients. Results of examination of the abdomen that are consistent with an acute condition within the abdomen or intestinal obstruction are not unusual but characteristically suggest more common causes for these problems.

Although routine gastrointestinal contrast studies in patients with pulmonary tuberculosis are unnecessary, gastrointestinal symptoms, weight loss or occult blood in the stool are indications for carrying out upper gastrointestinal series and barium enema. Because of the frequent occurrence of tuberculous enteritis in the ileocecal area, it may be impossible to distinguish colonic carcinoma or regional enteritis from gastrointestinal tuberculosis on contrast studies.

The inability to differentiate between carcinoma of the colon and tuberculous enteritis on radiographs is often an indication for operation. Coexistent colon carcinoma and tuberculous enteritis have been reported[14] and this must be borne in mind when operation is considered.

The findings on intestinal contrast studies in our patients, although consistent with tuberculous enteritis, were also interpreted to suggest Crohn's disease, toxic megacolon, perforated ulcer and carcinoma. Diagnosis was made from contrast studies in one patient when reexamination following antituberculous chemotherapy showed resolution of both pulmonary and intestinal lesions. Once diagnosed, uncomplicated tuberculous enteritis can be effectively treated with antituberculous drugs such as isonicotinic acid hydriazide and ethambutol hydrochloride.

The complications of tuberculous enteritis which may require surgical operation include hemorrhage, obstruction, perforation with abscess formation, free perforation and fistula formation. Obstruction is the most frequent complication and usually occurs late in the disease as inflammation subsides and fibrosis progresses. Failure of obstruction to resolve with nonoperative measures necessitates resection of the diseased bowel with primary anastomosis.

In cases of tuberculous enteritis, the incidence of perforation with associated abscess formation has been reported as high as 7 percent.[15,16] Free perforation, rare even before the use of antituberculous drugs,[17] has been reported in the literature only 18 times before 1960.[18] Since then we are aware of only four additional cases.[18-20] In three of the four cases the patients' recovery was satisfactory following operation. Because the finding of free air on x-ray films of the abdomen is most commonly associated with perforated peptic ulcer, the surgeon is generally surprised to find intestinal tuberculosis with free perforation.

Resection of the involved bowel with primary anastomosis in combination with antituberculous chemotherapy is now the recommended treatment for the surgical complications of tuberculous enteritis.[21] Freant and Sawyers' review of the surgical management of tuberculous enteritis concludes that resection of the diseased bowel with primary anastomosis is the safest and most efficacious treatment.[22] In our five patients in whom operation was carried out, resection with primary anastomosis was utilized successfully in three.

The previously reported 50-percent operative mortality in perforated tuberculous enteritis[20] may be attributed to two factors. Firstly, infection with a combination of enteric organisms and tubercle bacilli results in a particularly virulent peritonitis. Second, in a debilitated patient with tuberculosis simple closure of the perforation is often ineffective because of poor wound healing and the frequent presence of distal intestinal stenosis results

in disruption of proximally sutured perforations. In our series the only operative mortality following resection occurred at 24 hours after operation when the patient died from overwhelming pulmonary infection.

Our results and the more recent experience of others lead us to recommend the inclusion of tuberculous enteritis in the differential diagnosis of patients with active pulmonary tuberculosis and abdominal pain. The antituberculous drugs, isonicotinic acid hydriazide (Isoniazid®), para-aminosalicylic acid (Pascorbic®) and ethambutol hydrochloride (Myambutol®) are the mainstays of therapy of both pulmonary and gastrointestinal tuberculosis. When complete obstruction, hemorrhage or perforation occur, we feel one-stage resection of the diseased bowel with primary anastomosis is the operation of choice.

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